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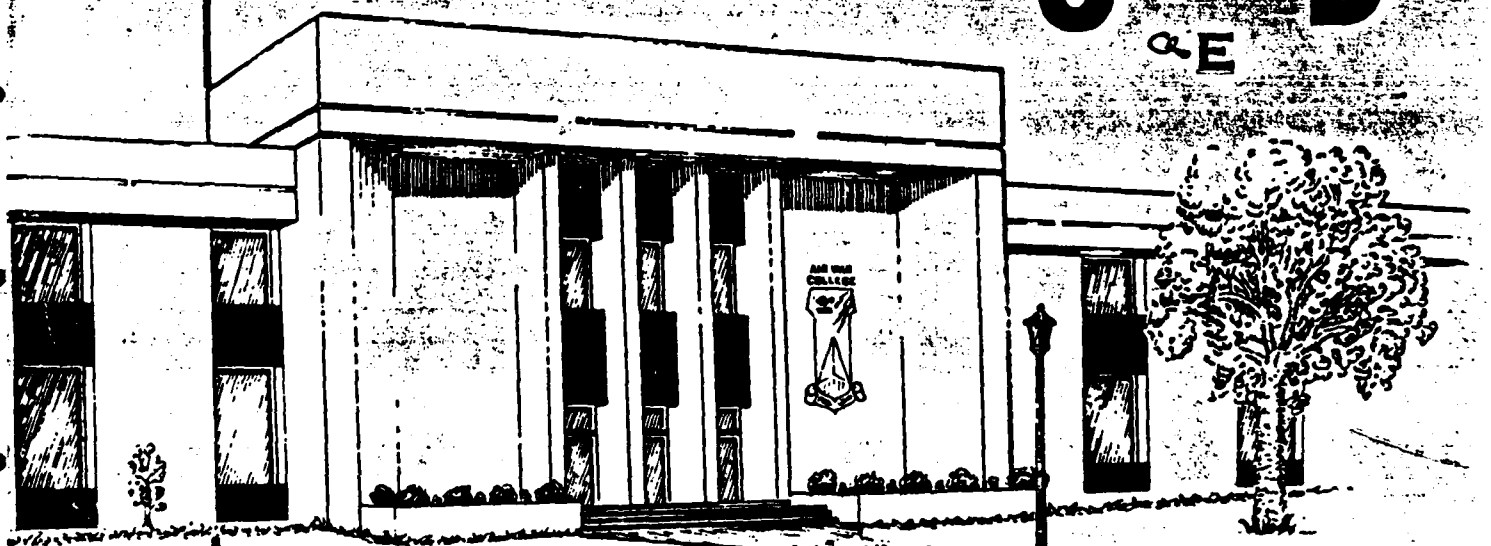
RESEARCH REPORT

LARGE FORCE EMPLOYMENT--NATO'S TURN TO CARRY THE BALL

LT COL GARY A. VOELLGER

1988



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LARGE FORCE EMPLOYMENT--NATO'S TURN TO CARRY THE BALL

by

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A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE RESEARCH

REQUIREMENT

Research Advisor: Colonel Thomas J. Yax

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AIR WAR COLLEGE RESEARCH REPORT ABSTRACT

TITLE: LARGE FORCE EMPLOYMENT: NATO'S TURN TO CARRY THE BALL

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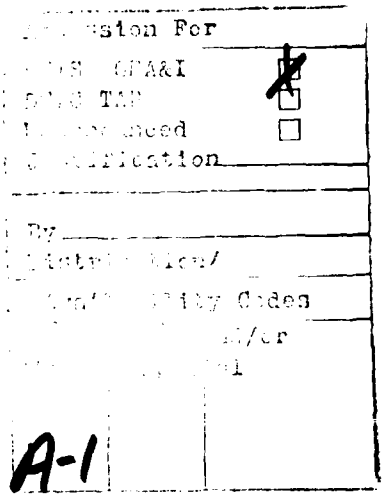
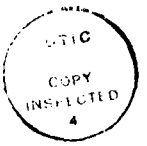
The paper reiterates the critical importance of effective application of airpower in the NATO Central Region. It advocates the use of large numbers of tactical air assets in integrated attack packages, outlining the benefits achieved from having a capacity to do so. It describes progress made by USAF planners in planning and conducting large scale tactical air employment exercises and recommends that NATO develop an internal capability to plan, integrate, command and control the large scale employment of tactical air assets that are provided by the Central Region Air Forces.





BIOGRAPHICAL SKETCH

Lt Col Gary Voellger is a native of Baltimore, MD, but grew up in the San Francisco Bay area. He is a 1967 graduate of San Jose State University where he received his commission through Air Force ROTC. After two years as a SAC personnel officer, he was selected to attend Navigator trainimg at Mather AFB, CA. His first operational assignment was to RAF Bentwaters, England as an F-4 Weapons Systems Officer. In 1972, he was sent to pilot training at Laredo AFB, TX with follow-on duty in the F-111 at Nellis AFB, NV and Tahkli Royal Thai AFB, Thailand. In 1974, he was reassigned to Cannon AFB, NM where he served as an F-111 Aircraft Commander, Instructor Pilot, Flight Examiner and Flight Commander. Lt Col Voellger completed his Master's degree through Pepperdine University in 1976. In 1979, he attended the Air Command and Staff College at Maxwell AFB, AL. After that, he was assigned to Headquarters USAF in the Deputy Directorate for Regional Plans and Policy and later became an Assistant to the Deputy for Joint & National Security Council matters. In 1984, he was reassigned to RAF Upper Heyford, England where he served as Commander of the 55th Tactical Fighter Squadron and Assistant Deputy Commander for Operations prior to returning to Maxwell AFB in July 1987 for Air War College.

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CHAPTER 1

INTRODUCTION

THE CONVENTIONAL BALANCE IN WESTERN EUROPE

The 8 December 1987 signing of the Intermediate-range Nuclear Force (INF) Treaty between the United States and the Soviet Union has generated renewed interest in the conventional military balance between the world's two major military alliances, the North Atlantic Treaty Organization (NATO) and the Warsaw Treaty Organization, popularly referred to in the West as the Warsaw Pact (WP).

This reevaluation of the military balance has tended to focus on the European Central Region, the arena where the greatest number of opposing forces confront each other. A look at the balance of conventional forces in the Central Region shows that the WP Divisions outnumber the NATO Divisions 59 to 26 (see note 1); WP main battle tanks outnumber NATO'S tanks 17,000 to 6,500; in armored vehicles, the WP advantage is 25,000 to 14,000; in main artillery, the WP advantage is 6,000 pieces to 2,000 pieces (see note 2 below); in combat aircraft, attack helicopters, air defense guns and surface-to-air-missiles (SAMs), the WP maintains roughly a 2 to 1 advantage. (31:120)

Note 1: WP Divisions have fewer assigned personnel; accordingly, the WP manpower advantage is only a 5:4 ratio. However, the WP's greater "tooth to tail" ratio in their forces tends to equalize the warfighting capacity of a NATO versus a WP division. (34:16)
Note 2: Some military experts consider this the most critical NATO shortfall. (24:-/5:251/8:254-55)

NATO'S WARFIGHTING STRATEGY

Although the exact numbers in the above comparisons are often debated, it is generally accepted by unbiased observers that the WP possesses a significant numerical superiority in the European Central Region. (19:16-19/34:16&58/33:5) To counter the significant WP numerical superiority, NATO has proposed a Grand Strategy (23:10) of Follow-On Forces Attack (FOFA). According to the FOFA strategy, NATO will use what has generally been considered to be its qualitatively superior air forces (33:136-7) and indirect fires to attack, delay, disrupt and destroy second and subsequent echelons of the WP ground forces, thereby preventing the follow-on forces from impacting adversely on critical ground engagements. (34:76) Theoretically, FOFA will provide NATO ground forces the opportunity to defeat WP ground forces piecemeal by using limited maneuver (see note 3 below) and interdiction to obtain local ground force superiority. (34:52) Colonel Raymond J. Reeves, in his paper on airpower in modern war, relates how in the 4-8 Aug 1942 battle of Pogreloye Gorodische the German Army Group Center used tactics similar to FOFA to defeat a Soviet force four times its size, with seven times its equipment. (29:15-16)

Note 3: Political considerations prevent NATO commanders from completely adopting the deep maneuver philosophy of the U.S. Army's AirLand Battle doctrine. NATO's avowed wartime objective is merely to restore prehostility borders and not to control any WP territory. Many European members of NATO believe therefore, that NATO forces should refrain from using WP territory as a maneuver area in a Central Region war. (34:126)

This strategy of obtaining local superiority when outnumbered strategically dates to the precepts of Sun Tzu (15:66-69). The strategy is also addressed by Clausewitz in terms that relate almost exactly to the situation in NATO:

> In practice, the size [of military forces] will be decided by the government. This decision marks the start of military activity--it is indeed a vital part of strategy--and the general who is to command the army in the field usually has to accept the size of his forces as a given factor.... Consequently, the forces available must be employed with such skill that even the absence of absolute superiority, relative superiority is attained at the decisive point. (18:196)

CHAPTER II

AIRPOWER IN THE SUPPORT OF NATO'S STRATEGY

THE ROLE OF AIRPOWER IN EUROPE

Lt Gen Eberhard Eimler, Chief of Staff of the German Air Force, in his March 1987 article concerning the role of airpower in the Central Region, emphasized the capability of airpower "to project concentrated military force over large distances in comparatively short spans of time"--characteristics critical to the success of FOFA. (11:50) Lt Gen F.J. de Jong, Chief of Staff of the Royal Netherlands Air Force, was even more specific regarding airpower's importance in Europe when he stated: "In the Central Region, offensive airpower, with its inherent qualities of rapid, flexible and concentrated response, is an indispensable factor in the philosophy of NATO's strategy:..." (5:82) In their 1986 study comparing the NATO and WP command structures, Lt Col John Hines and Dr Phillip Petersen go so far as to conclude that: "The primary resource with which CINCENT could influence the course of the [future] war [in Central Europe] is airpower." (17:559)

A STRATEGY FOR APPLICATION

If it can be agreed that airpower is a critical factor in determining the outcome of a Central Region war, then a key consideration in how to implement the FOFA strategy must be the ability of NATO air forces to employ their combat "potential" so that it sufficiently delays, disrupts and destroys the WP forces

across the 1400 kilometer Central European front. The word "potential" is emphasized because airpower, like ground power, is not effective simply because of its mere existence. It must be employed in such a manner that it effectively supports the theater commander's operational objectives. This position is substantiated doctrinally in U.S. Air Force Manual 1-1 by the statement: "An air commander adjusts his plan to meet the requirements of a particular military action, but his guiding principle is to employ aerospace power as an indivisible entity based on objectives, threats, and opportunities." (35:2-10) It is the issue of "how" we employ potential offensive airpower in the NATO arena that needs to be seriously addressed by NATO commanders.

THE EUROPEAN APPROACH

At the present time, non-U.S. NATO offensive air assets are envisioned by the Europeans as being employed almost exclusively in independent 1-4 aircraft formations. (6:59/20:40) In essence, offensive air assets will, for the most part, follow the de facto ground employment scheme of national, vice coalition, employment. In the author's opinion, the Europeans have adopted such an employment philosophy for three reasons. First, a concern that there would be a significant financial burden associated with developing a command and control system to coordinate offensive air operations; second, a visceral feeling that coordinating offensive air operations falls in the "too hard to do" category; and finally, a hesitancy to relinquish "control" of national air

forces to a supranational organization. The author believes that such a predisposition has served as a barrier to serious analysis of the tactical utility of integrated vice autonomous operations. While there are some discernable advantages to this philosophy (i.e., reduced coordination requirements, fewer standardization requirements, a capacity for autonomous operations when communications are disrupted, etc.), there are distinctly more significant advantages (some having the potential for drastically altering the ground "Correlation of Forces") to being able to maneuver and/or employ large numbers of tactical air (TACAIR) assets in a coordinated manner. Applying "aerospace power as an indivisible entity," (35:2-10) instead of employing it in small unintegrated elements, maximizes its effectiveness and enhances the chances that it will have an impact on the ground situation. Major Stephen Harper, in his paper on employing airpower as an "indivisible" force (16:9-10), supports the case for large force employment when he states:

> NATO airpower commanders face several significant obstacles to implemention of this strategy [attacking WP airbases]. As stated previously, the capable and steadily improving Warsaw Pact air defense network constitutes a major threat to the survivability of NATO strike aircraft. In order to successfully carry out effective strikes and keep attrition rates at an acceptable level, it has become necessary for planners to develop "attack packages" ..... This strategy constitutes a proper case of indivisible airpower and carefully weighs and balances the three basic planning considerations, the employment objective, the enemy threat, and force requirements outlined in AFM 2-1. (37:4-2) .... Once tailored to the specific situation, the attack package will be able to fight its way through the enemy air defenses, surpress terminal defenses in the targeted area, effectively attack the desired targets on the airfield, and then safely withdraw.

CHAPTER III
THE TACTICAL BENEFITS ASSOCIATED WITH LARGE FORCE EMPLOYMENT PACKAGES

BASIC PRINCIPLES

The seminal justification for the employment of TACAIR assets in large force packages is the warfighting principle of mass. No principle of warfare has quite as much impact on an engagement as mass. Clausewitz communicated the principle most effectively when he stated: "there is no higher and simpler law of strategy than that of keeping one's forces concentrated." (18:204) As airmen, we frequently violate this principle by subordinating the principle of mass because of a misguided belief that small formations of aircraft will have less combat attrition because they are less likely to be detected. This belief is apparently substantiated by attrition tables that include aircraft detection as an attrition factor. Unfortunately, those same attrition tables do not take into consideration the positive attrition factors attributable to massed formations (i.e., the overloading of a defensive system's ability to service all of the penetrating aircraft in a short time frame, the synergistic affects of mutual self-defense and/or jamming of enemy defense radars, and the command and control sorting difficulties generated for the defense). (33:33-37)

A second error mission planners make when considering the utility of large force packages is to be overly concerned with short term attrition rates at the exclusion of attrition rates in

relationship to mission accomplishment. For example, there is a tendancy to reject using large force packages, statistically assured of success, if attrition rates are significantly higher than those for a small formation making the same attack. What is often overlooked is that smaller formations will have to be sent to the target several times to attain an equivalent amount of destruction. Those repetitive attacks become multipliers in the attrition computation. Nevertheless, there seems to be a bias for assuming that attrition spread over a longer time frame equates to lower attrition; an obviously specious conclusion. Attrition must be related to losses attained in accomplishing the desired objective, not losses encountered on particular missions. It should also be kept in mind that spreading offensive attacks over several missions or across several targets may well result in the loss of the synergistic effects of mass destruction. The same amount of destruction spread across several targets or over an extended period of time has far less effect on an enemy's capability and will to fight than does destruction directed at specific units in a relatively short period of time. (29:21) It is far more effective to destroy 20 percent of the forces in 5 units than it is to destroy 5 percent of the forces of 20 units. Focusing destruction also inhibits an enemies ability to recover from the destruction since there are fewer unaffected units in the immediate vicinity to offer assistance. Finally, focused destruction has far greater impact on morale than destruction spread across time or geographic location. A large number of

casualties in a few units will have significantly more effect than the same number of casualties spread over several units. Confederate Maj Gen Nathan Bedford Forrest, attributed success in warfare to: "Whoever get there the firstest with the mostest!" The speed inherent in airpower can insure that we get there the "firstest." We can also insure that we have the "mostest" firepower by massing NATO's airpower where and when it's needed.

A final basic principle of war supported by the use of massed TACAIR is surprise. There is a tremendous advantage to be gained by maintaining a large "bag of tricks" to confuse the enemy. If there was any one message that came out of the USAF experience in Southeast Asia, it was to vary your tactics. Lt Col James Kelly of the RED FLAG staff summarized this point in an article for the USAF Fighter Weapons Review: "The fewer the attack options, the easier it is for the enemy to counter the plan and present an effective defense." (21:3) No one can seriously argue that large force employment is the only, or even the primary, means of employing TACAIR. Nevertheless, as responsible tacticians, we must be capable of employing airpower in all of its effective forms. To ignore the benefits of massed TACAIR is to unnecessarily limit our tactical options.

THE HIGH COST OF LIVING

Turning to more practical considerations, one of the most persuasive arguments for large scale force employment is what I have labled "the High Cost of Living." The highly dense and extremely lethal air defense network presented by the WP forces

requires a tremendous investment in supression of enemy air defenses(SEAD) if NATO TACAIR is to survive penetration of the forward edge of the battle area (FEBA), target ingress, target attack, egress and recovery to friendly airspace. The Congressional Office of Technology Assessment makes it abundantly clear when it says: "Attacking aircraft [in Central Europe] would have to deal with enemy air defenses, requiring defense suppression, escort aircraft, and preparation of attack corridors." (34:37) Those SEAD assets are few in number and are very expensive to procure. NATO simply does not have enough SEAD assets to allocate a SEAD package for each small formation. Some contemporary tacticians project that, in a high threat environment only 20-30 percent of future force packages will be actual attack assets. (32:99) Less force protection equates to higher attrition, an unavoidable reality in modern warfare.

Conversely, if large force packages are organized, even if only for the penetration of the high density threat area along the FEBA, the full range of SEAD assets can be made available for support. The synergistic affect of combining the various SEAD assets with the attackers organic self-protection jammers will combine to reduce attrition rates for the package; one of those previously mentioned benefits seldom considered in attrition computations.

COUNTERING SOVIET ECHELONMENT

Soviet doctrine has long been based on a theory of echelonment of forces. Maj Gen Fredrich W. von Mellenthin, a

member of the German General Staff and a Panzer Corps commander, describes Soviet tactics in World War Two in the following manner: "The Russians usually attacked with many divisions on very narrow fronts." (38:69) He goes on to say: "The Russians overwhelmed the Germans by the prodigal use of manpower against thinly held German fronts,... The Soviets also contributed to the defeat of the Germans by producing extraordinary quantities of tanks and artillery-style weapons, (38:72) ...armored corps... were assigned the task of assisting infantry divisions in making a breakthrough. The mechanized corps were to exploit the breakthroughs and penetrate far behind enemy positions." (38:69-70) These descriptions sound amazingly like the 1987 description of present-day Soviet tactics by the Congressional Office of Technology Assessment. (34:63)

Countering massed WP echeloned forces presents real challenges, but it also presents some distinct opportunities. As the WP forces are "front loaded" or concentrated in assembly areas prior to launching breakthrough attempts (34:68), or while they are in road convoys on the way to the concentration areas, they present a "target rich" environment for NATO's offensive TACAIR forces. (34:78/16:14) Large scale TACAIR attacks against such formations (see note 4 below) could have a devestating affect on the WP attack plan by consolidating NATO destructive

NOTE 4: The Institute for Defense Analysis concludes that a typical Soviet division possesses a minimum of 3300 vehicles, only 30 percent of which are armored and are concentrated across a 7-15 mile front. (30:table 5-1)

power at the greatest concentration of the WP forces. Massed airpower is particularly relevant to such a task since the estimated time frame to move a WP regiment forward is in the range of 1.5 - 2.1 hours; too short of a period to effectively shift ground forces or effectively employ small formations of TACAIR. (34:84) An additional benefit to employing massed TACAIR at such a point is the added disruption and psychologically debilitating fatigue factors that are generated against the forces that are about to be launched into a major attack. Field Marshal von Rundtstadt, the German commander in France following the Normandy invasion summarized the effect of airpower on his forces: "It was all a question of air force, air force, and again air force....We were prepared for various eventualities ...that all came to nothing or were rendered impossible...[by enemy airpower]." (25:5) Small intermittent attacks spread throughout a unit just don't have the same psychological impact as a single massive attack directed at the entire force at one time. Maj Gen von Mellenthin concisely addresses what he found to be the best way to defeat the Russian echelonment in his book NATO Under Attack:

> Another characteristic Russian combat principle was to try to establish a bridgehead anywhere... they often grew with amazing speed into major centers of resistance. There was only one sure countermeasure, a principle for operations even today: Once the Soviets have set up a bridgehead or established an advanced position, they must be attacked at once and WITH ALL MEANS AVAILABLE. Delay could be disasterous. An hour's delay would endanger a counter-attack, a few hours' delay would guarantee its failure, a day's delay would invite catastrophe along a broad front. [emphasis added]. (38:52)

On the other hand, von Mellenthin points out that if the WP forces plan of attack can be disrupted that: "Under attack in fluid conditions and forced to think for themselves, Soviet commanders and troops would be subject to paralysis, panic, and disintegration." (38:90) Jacquline Davis and Robert Pfaltzgraf, Jr. have highlighted what may well be the "Center of Gravity" (18:595-96) of the Soviet/WP forces in their Special Report for the Institute for Foreign Policy Analysis: "

> The potential for success of a Soviet/Warsaw Pact attack against Western Europe would depend on the ability of enemy forces to maintain the momentum of a high rate of advance as described in the strategic-military literature of the Soviet Union. (4:vii)

Massed TACAIR can have a major impact on slowing that momentum and turning the tide of battle in Europe!

The point is abundantly clear. WP force concentrations must be attacked as rapidly as possible and "with all means." TACAIR, with large integrated attack packages can do just that. Failure to employ TACAIR in such a manner, given the opportunity, would be tantamount to providing the enemy a sanctuary.

COUNTERING THE OPERATIONAL MANEUVER GROUP

Since the early 1980s, a major hermeneutic debate has erupted among "Soviet watchers" as to whether the Soviets have switched their warfighting strategy from echelonment to the use of operational maneuver groups (OMGs). (28:30/8:251) Many observers believe the Soviets have revived a WW II concept of using independent divisions, armies or regiments (the OMGs) to penetrate the FEBA, wreak havoc in the NATO rear areas and

capture key rear area objectives. (34:62) Others emphasize that the OMG is merely performing a function and is not a deliberately organized unit. This school of thought believes that OMGs will be formed extemporaneously to exploit breakthroughs resulting from the traditional echelonment strategy. (34:71) Regardless of their genesis, OMGs are highly threatening to the NATO forces. However, they are also highly susceptible to the effective application of massed TACAIR.

In that an OMG is a self-contained breakout force, it has the disadvantage of being susceptible to being isolated from the WP main force units, either by ground unit flanking movements, or by using massed TACAIR to blast a cordon sanitaire across the rear of the OMGs attack corridor. NATO forces can take advantage of this isolation by suppressing the OMGs organic air defenses, primarily with ground based fires, and then applying massed TACAIR to attrite the OMG to the point where it is no longer a viable ground maneuver threat. Close air support (CAS) assets could then be applied in a relatively benign air defense environment to effectively destroy the remaining OMG vehicles. In effect, NATO would "allow" the WP to violate the principle of mass by "metering" a flow of OMGs into "killing zones" where massed TACAIR would have the advantage of attacking WP maneuver units without having to penetrate or operate in the high density threat area of the FEBA.

Regardless of the WP tactics, the impact of massed TACAIR can disrupt a major "Center of Gravity" of the WP forces--the

correlation of forces (CoF) philosophy for conducting their operations. Virtually all WP attack planning is based on a carefully, and rigidly, calculated formula that compares the strengths and weaknesses of opposing forces. If the CoF is in favor of the WP commander he will attack; if not, he will not pursue the engagement. Fortunately for NATO, massed TACAIR has the potential to drastically alter the CoF in a relatively short period of time, potentially invalidating the CoF computations made by WP tacticians.

Unfortunately, NATO has done little to date to insure that the NATO air forces are integrated in such a manner that they can effectively employ large numbers of tactical aircraft from differing nations in an integrated attack of WP follow-on forces in the battlefield environment. Nevertheless, some large scale air employment exercises have been conducted by the United States Air Force Europe (USAFE) and point to the viability of large force employment packages in the Central European Region.

CHAPTER IV

RESISTANCE TO LARGE FORCE EMPLOYMENT TACTICS

THE PRINCIPLE

The issue of what is the "proper" form for employing offensive airpower has raged essentially since the aircraft was first employed as an offensive weapon in World War I. The "Baron von Richtofen school," generally associated with the fighter community, has advocated that small unit autonomous attacks against an enemy have the greatest chance for survival and therefore, the greatest chance for success in destroying enemy forces. On the other hand, the "Douhet school" of massed airpower, generally associated with the bomber community, argues that offensive airpower is most survivable and efffective when employed as a single entity. As in many such arguments, the reality of the situation is that neither school is entirely correct. USAF experience over the years has demonstrated that the proper form for employing offensive airpower is scenario dependent. This paper does not advocate using massed TACAIR as the only, or even the principle method for employing airpower to counter the WP. However, it does strongly advocate having the capability to mass TACAIR when the situation dictates its use in such a manner. The following paragraph discusses some of the objections to massing TACAIR, but counters those objections with the equally valid benefits inherent in massed TACAIR.

SPECIFIC CONCERNS

One of the major objections to massing TACAIR is the apparent vulnerability of the force. Opponents of large force employment point out that an enemy will have no doubt regarding the location of the attacking aircraft. They further point out that members of a large force are constrained by the package makeup from defensive or counter-offensive maneuvering. While one cannot deny those claims, there are comparable offsetting benefits to large force packages. A properly constructed package will have sufficient counter-air and SEAD assets to offset the enemy's knowing where the package is. In fact, there may be times where we will want to draw the enemy defensive air assets into the battle. One should also not overlook the self-defense capabilities of a large force package. A package with 300 plus AIM-9L missiles and 30-50 SEAD assets is no pushover.

A second objection to large force packages is their lack of autonomy. Members must sacrifice some of their weapon system's capability to conform to the least common denominator in package. While this can be a valid complaint, proper force structure will insure maximum compatibility among aircraft. Furthermore, it is often well worth sacrificing performance in one area for the benefits provided by the package in others (i.e., sacrificing speed for defense suppression support).

A third objection to large force packages is the training investment required. This is probably the weakest of all arguments against large force employment. USAF experience in RED

FLAG, COPE THUNDER, HAMMER and other large/composite force training has shown that minimal training is required for most aircrews; the exception being mission commanders. However, the additional training invested in mission commanders has proven to be well worth the effort. It has greatly improved the mission commanders' (usually Squadron Commanders, Operations Officers or the equivalent) ability to effectively employ TACAIR assets and reinforces their role as warfighters, not just administrators. (7) Finally, large force employment training has identified the need for operations personnel at Tactical Operations Centers to be war fighters vice mere schedulers. While this means that additional training is required for them, it is training that should have been done all along.

Fourth, large force employment requires a more capable command and control network than small unit operations. Again, this concern is valid. However, NATO will need such a command and control network if it expects to fight outnumbered strategically and win. The command and control network required for large force employment will be no more complex than that required to effectively employ small units in a coordinated fashion across the theater.

CHAPTER V

EXERCISE HAMMER--THE FIRST STEPS

THE EVOLUTION OF HAMMER

The USAF began experimenting in earnest with an integrated approach to employing TACAIR at RED FLAG exercises in the late 1970s and has continued with refinements to date. (21:2/14:5) Large-scale TACAIR employment (integrated formations exceeding 150 aircraft) first began to be practiced by the USAF in the PACAF area of responsibility (AOR) in the early 1980's. Although early proponents had stressed the potential benefits of employing massed tactical airpower, adoption of the AirLand Battle doctrine by the U.S. Army in 1980 was a key factor in enhancing the environment for its acceptance as a viable tactic. In 1985, one of the strongest proponents of large-scale TACAIR employment, Maj Gen Thomas G. McInerney, moved from PACAF to take command of USAFE's Third Air Force (3AF). Shortly after his arrival in Europe, Maj Gen McInerney tasked his Operations staff to develop an exercise series to practice large-scale TACAIR employment in the NATO region. Using the "walk before you run" approach, 3AF began the HAMMER series of exercises with a 40 aircraft concept evaluation exercise in Nov 1985. This was followed by HAMMER 85-2 in Dec 1985, where 148 aircfaft from 3AF, 17AF and the RAF were scheduled to conduct air-to-ground (A/G), air-to-air (A/A) and close air support (CAS) missions supported by air-refueling assets. HAMMER 86-1 was flown in conjunction with the United

Kingdom (UK) air defense exercise ELDER FOREST on 23 Apr 86. This HAMMER incorporated UK Rapier and Bloodhound air defense units, the NATO AWACS, EF-111 tactical jamming aircraft and F-4G Wild Weasels in addition to the now standard UK air defense command and control (C2) network, air refueling support and some 312 scheduled A/G, A/A and CAS aircraft. HAMMER 86-2 was conducted on 6 Oct 86 and introduced U.S. Army Patriot units to exercise play along with RAF Tornados in the offensive role and the first participation by Dutch and Belgian Air Forces. The attack force was split into 2 elements of approximately 175 aircraft each, laterally separated by 150 miles. In HAMMER 87-1, tactical deception, EC-135 Rivet Joint, communications (comm) jamming, Operations Security (OPSEC) evaluation, RF-4 TEREC, Hawk air defense missiles, an Electronic Warfare Training Range, German Air Force Tornados and Canadian Air Force F-18s and AWACS support for both forces were added to the previous cumulative exercise assets. Again, approximately 350 aircraft took part in the 19 May 87 exercise. The most recent exercise, HAMMER 87-2, was scheduled to take place on 6 Oct 87 and added the EC-130 Compass Call, Comfy Sword ground jamming, HC-130 and HH-53 combat rescue, TR-1, C-130 combat resupply and helicopter insertion of Special Operations Forces to the previous scenarios. (26:2/27:2) Unfortunately, HAMMER is a visual flight rules only exercise at present, and bad weather on both the primary and backup days prevented execution of flying portions of the exercise.

As a result of this evolutionary process, HAMMER has become

the largest one-day exercise of airpower in the free world. It has developed to the point where it integrates virtually all aspects of TACAIR and the vast majority of the air and ground support elements that would support a major air offensive. HAMMER has provided USAF aircrews and planners unparalleled experience that contributes directly to their ability to defeat the WP forces.

THE BENEFITS OF CONDUCTING LARGE FORCE TRAINING

Large force TACAIR employment doesn't just happen. It requires the complex coordination of the ground order of battle (GOB) with the Joint/Combined force commander's battle plan and the air force's capabilities to support the battle plan. It further requires that staffs at all echelons of command be capable of accurately and expeditiously performing those functions necessary for the proper execution of the theater commander's battle plan. Experience with exercise HAMMER over the past two years has clearly demonstrated the value of such exercises in preparing operational commanders and their staffs for assuming such responsibilities.

At the senior officer level (colonel and above), HAMMER has demonstrated that, for the first time in the history of employing air forces, operational commanders have the command and control tools necessary for employing offensive air forces as maneuver elements, much as a ground commander employs his ground forces. Historically, commanders of offensive air forces have been forced to treat their aircraft much like ballistic missiles. Once the

aircraft were launched, there was little opportunity, other than selective "go/no-go" criteria, to modify execution of the mission in response to a changing tactical situation. Specific missions were planned, briefed and then executed; hopefully, according to the plan. Although it has not been exercised as yet, HAMMER has demonstrated that the command and control net is available to make significant changes to the attack package prior to employment (i.e., moving the penetration corridor, changing the FEBA penetration time, adjusting the combat air patrol (CAP) in response to enemy reaction, etc.) This is a significant breakthrough in the employment of TACAIR and should be pursued in future exercises. HAMMER has also provided an excellent training ground for planning staffs, forcing them to think of employing airpower as an entity. In the past, planning staffs have tended to perform more as "schedulers," concerning themselves mainly with tasking and deconfliction. HAMMER has refocused planning staff attention on airpower support for the theater battle plan.

Aircrews have also benefited from the large force exercises. Although initially reluctant to sacrifice their small formations' freedom to maneuver to the more constrained package concept, many are beginning to expound on the benefits of force packaging; (7) especially for FEBA penetration. Aircrews have further benefited from the large force exercises by developing and practicing new tactics that enhance the large formation's viability. Multi-Command Manual (MCM) 3-1, the USAF tactics manual, now contains a broad discussion of composite force planning and execution

considerations. (14:v.I) One of the most significant unexpected benefits from HAMMER was learning how to coordinate ground operations, launch and rendezvous of a Wing-size package--all with minimum/no comm. Aircrews have become so confident in the procedures that many prefer the "min comm" operations to "normal" procedures.

Large formation exercises have also benefited the combat support elements at the TACAIR units. Maintenance and logistics personnel have developed new procedures for launch, recovery and turnaround of large numbers of aircraft in minimum time. Some of those procedures were found to also enhance smaller formation combat operations and were adopted as routine. Some Wings found that, without senior leadership emphasis, it was difficult to meet large formation tasking. However, once maintenance and supply personnel were atuned to the mission significance, aircraft generation goals could be readily exceeded. Another supporting agency that benefited greatly from the HAMMER exercises was Air Traffic Control (ATC). Despite initial concerns about its ability to support such formations, ATC personnel developed safe, combat oriented procedures, that allowed launch and recovery of Wing-size formations. (7) Thus, one of the major lessons learned was that performance will never exceed imagination. Being willing to envision large force formations, and then practicing them, demonstrated that the capability exists to conduct large force operations, but they must be practiced routinely to ensure that contributors retain

both proficiency and confidence in the concept.

One of the major tactical benefits of the HAMMER series has been the opportunity to experiment with medium and high altitude penetration tactics. The USAF has began to look at such tactics in response to the increasing lethality of WP air defenses. Colonel Elmar Dinter and Dr Paddy Griffith describe WP defenses and possible counter-tactics as follows:

> Air defense systems in general have been given considerable prominence in modern armies, and particularly since the full interlocking range of Soviet equipment was demonstrated in action during the October War. The aim today is to use heavy and medium missiles to force enemy aircraft down from the higher altitudes to nap-of-the-earth flying, and then to put up an intense barrage at low levels from infantry-held missiles, quick firing anti-aircraft guns and any other light weapons which can be brought to bear.... In fact there are are two competing schools of thought as to how one can best penetrate ground air defenses. On the one hand is the 'American' school, which would attack at relatively high altitudes but in balanced teams composed of electronic warning, air to ground suppression and air interceptor types as well as aircraft intended to make the main attack itself. The approach has the advantage of flying above the levels which can be reached by anti-aircraft guns and low altitude weapons, and thus it limits the threats to be encountered. Its disadvantage, however, is that it requires a large and specialised team to be formed for every mission, with all the administrative problems and diversion of scarce assets which that entails." (6:58-59)

HAMMER has provided aircrews an opportunity to develop and practice medium penetration/attack packages; but of even more importance, it has provided planners a forum for developing practices that reduce the "administrative problems" Dinter and Griffith refer to. Significant progress has been made in this area by the Third Air Force Operations staff, with even more progress expected in the future.

HAMMER provides a superb arena for improving airborne command and control training. There is no comparable opportunity in the free world for airborne mission commanders, their battle staffs and AWACS personnel to conduct comparable real-time battle management. HAMMER missions also provide mission commanders an opportunity to evaluate AWACS capability in relation to potential wartime scenarios. There is also no better arena for evaluating and refining AWACS procedures to enhance AWACS utility as a force multiplier. A general consensus among airborne mission commanders is that AWACS has been of limited utility because the mission commanders were not sufficiently familiar with AWACS' capabilities. (1:25) Increased emphasis on mission commander training in AWACS capabilities, along with continued large force employment exercises, will provide NATO with mission commanders proficient in large force employment procedures. Finally, large force employment exercises enhance Joint and Combined force operations, an absolute necessity for NATO. To date, six nations' air forces and the U.S. Army have participated in HAMMER. While such participation is most welcome, it has only scratched the surface potential for enhancing joint and combined operations. Rear Admiral J.L. Weatherall, Royal Navy, and current Deputy Assistant Chief of Staff for Operations at Supreme Headquarters Allied Powers Europe (SHAPE) builds a strong case for practicing combined operations in his comments on the value of tactical doctrine: "Formations of different nations will deploy alongside...or even be grouped in multinational

formations. This will demand a high degree of interoperability." (39:37) Although RAdm Weatherall was refering to ground combat, the sage advice clearly applies to air forces as well. Lt Gen de Jong, Chief of the Dutch Air Force, also address the value of practicing the tactics we may use when he stated that: "more and more NATO air forces seek, and get, special training scenarios like 'RED FLAG' and 'MAPLE FLAG'. Realistic training--train as you fight--improves the combat effectiveness and survivability of our air forces. " (5:83)

THE MAJOR LESSONS LEARNED

Although only five HAMMER exercises have been flown to date, the "learning curve" has approached the vertical. Participants have filled their "lessons learned" books with both classified and unclassified aids to mission enhancement. The sheer volume of material precludes mentioning all but the most significant in this paper.

First, large scale integrated formations can be safely planned and executed. HAMMER works! Large formations of TACAIR can be integrated and employed as an entity. Inspite of the apparent complexity of the exercise, there have been no safety of flight incidents associated with the exercise to date.

Second, deconfliction of large numbers of different types of aircraft can be accomplished. Procedures have been developed whereby deconfliction can become a computer generated product vice a manually generated product in the future.

Third, large force integrated employment must be exercised

regularly to be effective. The complexity of the concept requires that a nucleus of the planning and execution participants be experienced in large force employment.

Fourth, planning, command and control are the most critical links in the process. Aircrews can perform their missions very effectively with a minimum of information regarding the entire attack package provided sensible "exiting the fight" procedures are established. However, a poorly planned package has virtually no chance of being "salvaged" during execution.

Finally, a continuing effort must be made to further develop large force procedures before they are needed in a war. Only through additional practice will planners be able to determine optimum force size and composition for various scenarios. The planning cycle for large force employment is currently too long to be viable in combat. Continued refinement is needed.

THE HAMMER PLANNING CYCLE

At the present time, conceptual planning for the HAMMER exercises is being accomplished primarily by a five person planning cell from the USAF Third Air Force Operations staff. The progress they have made has been remarkable and reflects the potential for small battle staffs to take over such a process. Detailed planning, on the other hand, has required that each participating unit attend one or two, one-day planning conferences, approximately two-three months prior to the exercise date. These conferences are devoted mainly to insuring that all routes and targets are deconflicted and that support elements.

(tankers, AWACS, SEAD etc.) are properly integrated into the attack plan. The major portion of the detailed planning conducted by the Third Air Force Operations staff is devoted to deconflicting the exercise with civil operations, ensuring that peacetime operating procedures are adhered to and insuring that the "Blue" and "Orange" forces meet in the preplanned engagement zones. Most of this planning would not be required in a combat scenario. It is the estimate of the Third Air Force planners that the total manhours devoted to HAMMER (1500 hours per year by the entire staff) equates to an average of 29 hours per week. Much of the time is spent "coordinating" with other NATO air forces and Defense ministries in an effort to convince the appropriate staff personnel of the value of exercise HAMMER.

Notwithstanding the obvious benefits of possessing a capability to employ massed TACAIR assets, much the effort put into the HAMMER series may be wasted unless NATO adopts large force employment as a viable tactic and practices its implementation. Just as no one can justify large force employment of TACAIR as the only tactic for NATO air forces; neither can they intelligently suggest that autonomous operations by numerous small units is the only tactic that should be employed by TACAIR forces. Flexibility is one of airpower's inherent advantages and must be utilized if NATO is to stand a chance in a Central Region conflict. Dr William Emerson expressed the significance of flexible airpower most eloquently in his 1962 address to the Air Force Academy:

> Despite the visions of its protagonists of the prewar days, the air war during the Second World War, no less than the fighting on the ground and at sea, was attrition war.... Victory went to the air force with the greatest depth, the greatest balance, the greatest flexibility in employment. The result was an air strategy completely unforseen by air commanders, different in its methods but not different in its objects, from traditional strategy." (12:41)

NATO cannot afford to continue to treat their air assets as autonomous national forces, much as they have structured their ground forces. (6:59) To do so minimizes the effectiveness of airpower and invites defeat of those forces in detail. Dr Michael Clarke of Newcastle-Upon-Tyne University supports this theme in his statement that:

> In order to work effectively, the doctrine [FOFA] will certainly require greater cooperation from the US air force and the armies and airforces of the other allied powers on the central front [sic]." (3:55)

HAMMER is not the final solution to the problems of integrating NATO's air forces and maximizing their effectiveness, but it certainly is a giant step in the right direction. It is time to recognize the need for integrated large force employment, analyze the progress made to date, and develop a NATO-wide program for large force employment.

CHAPTER VI

HAMMER'S SHORTCOMINGS

Without a doubt, there are numerous problems associated with the current structure for planning and employing large scale TACAIR formations. Nevertheless, the problems are not related to either the validity of the concept or the value of what has been accomplished. The problems are mostly failures to take advantage of the concept and expand it to its most effective level of implementation.

First, HAMMER is planned by a USAF administrative headquarters staff and not by an agency in the warfighting chain of command. Third Air Force is a national headquarters organized to support U.S. air forces in the United Kingdom during peacetime. It has no role in the employment of forces during war.

Second, Third Air Force is not manned to continue to expand HAMMER or other large force employment exercises to the level they need to grow to.

Third, the Third Air Force staff lacks the authority to expand HAMMER within NATO. Participation by non-U.S. forces at present is purely voluntary and has no NATO sanctioning.

Fourth, NATO Allied Tactical Air Force (ATAF) and Allied Tactical Operations Center (ATOC) personnel miss an extremely valuable training opportunity by not being responsible for planning and executing HAMMER or similar large force employment

exercises.

Fifth, the NATO wartime command and control structure is not exercised in the strategy, planning and execution of massed airpower.

Sixth, only a small portion of NATO air forces are training in a tactic they might be expected to employ in wartime.

Seventh, the current HAMMER planning system is too tedious and labor intensive. As will be addressed later in this paper there are ways of significantly reducing the time required to construct a large attack package.

Eighth, HAMMER receives no higher headquarters funding despite being the largest one-day airpower exercise in the free world.

Finally, HAMMER is a visual flight conditions only exercise. Procedures need to be developed to expand HAMMER into an all-weather exercise. Given the vagaries of weather in Europe, procedures must be developed for employing large force packages in marginal weather conditions.

As can be seen from the description of HAMMER's shortcomings, it is not that large force employment exercises don't work, it's that the West has failed to take advantage of the full potential offered by such exercises. With a relatively minor commitment on the part of NATO members, HAMMER can become a NATO planned and executed exercise, significantly enhancing NATO's deterrent and warfighting capacity.

CHAPTER VII

THE SOLUTION

The solution to HAMMER's shortcomings is readily at hand. NATO commanders must cease thinking of airpower as being employed by one of two mutually exclusive tactical schools. (6:58) NATO must be willing to accept that flexibility in the application of airpower is essential; and that the potential impact of large force employment of TACAIR warrants an investment in preparing its air forces to execute such missions. Therefore, the following recommendations are made in the interest of enhancing NATO's warfighting ability.

RECOMMENDATIONS:

1. Headquarters Allied Air Forces Central Europe (AAFCE) should assume responsibility for conducting large scale TACAIR employment exercises in NATO's Central Region.

2. Each of the two Allied Tactical Air Force (ATAF) headquarters should be responsible for planning and conducting one large force employment exercise per year.

3. All exercise tasking communications (Air Tasking Orders, etc.) and inter-unit coordination should be executed through the NATO wartime command and control EIFEL net. (9:9)

4. Headquarters AAFCE, in conjunction with headquarters USAFE, should develop sophisticated large force planning computer software to support rapid preparation of integrated employment packages. Such software should include aircraft performance

data; available combat ordnance; unit location, aircraft generation times; support forces recommended for specific package sizes and threat conditions; rendezvous, holding and penetration deconfliction models (HAMMER provides some examples) and current AAFCE weaponeering data.

5. Headquarters AAFCE should develop several (5-10) "playbooks" containing preplanned large force employment packages focused on the areas most likely to require large scale TACAIR employment early in a Central Region war.

6. Headquarters AAFCE, through the Tactical Leadership Program (TLP) should develop and conduct a large force mission commanders course modeled on the USAF course conducted at Zaragosa Air Base, Spain.

7. The ATAFs should adopt a procedure of tasking each AAFCE Wing, through the EIFEL system, to fly one mission (1 aircraft minimum) per week to exercise the tasking network regularly.

8. Headquarters AAFCE should invest in computer generated combat simulatiors to train ATAF staffs in the use of airpower to support the theater commander's battle plan.

9. Procedures should be developed for conducting HAMMER type large force exercises in all-weather conditions.

THE OBSTACLES

Change, even change for the good, is one of the most difficult things to accomplish in a military service, let alone a coalition force like NATO. The greatest opposition to NATO undertaking the tasks recommended above will come as a result of

NATO's reluctance to take on any "new" tasking. However, it would be beneficial to point out that the recommendations listed above are not so much "new" as they are better ways of accomplishing the mission AAFCE is already responsible for.

A reluctance may also be encountered on the part of USAF planning staffs to relinquish control of an exercise series they have worked so diligently to develop. One method for overcoming any such reluctance would be to assign the most experienced HAMMER personnel to the AAFCE staff to help get the program off the ground.

A significant challenge confronting AAFCE exercise planners may be that of obtaining sufficient airspace for large force exercises. Obtaining large areas of dedicated airspace in Europe is always difficult. Notwithstanding that difficulty, there is reason to be optmistic. The United Kingdom appears willing to continue to support large force exercises in the future. Informally, some French airmen have indicated an interest in HAMMER and a willingness to seek government support for hosting large force exercises in French airspace. Another potential exercise area is the Danish peninsula, although the Danes have not been approached regarding such a proposal.

There may also be a reluctance on the part of some of the NATO air forces to dedicate aircraft to what are essentially command and control exercises (i.e., the flying in large force exercises is relatively benign). Nevertheless, it must be reinforced to those who fail to see the value of such exercises

that the way we defeat the WP is through teamwork, not through guerilla warfare from the air. Major General B.V. Larsen, the Danish Air Force Inspector General makes the point very succinctly: "Still there is only one way to exploit the inherent flexibility and mobility of modern fighter aircraft--centralized command and control. Without adequate adequate C3I this principle means little or nothing." (22:43-44)

THE BENEFITS

Lieutenant General Eberhard Eimler, Chief of Staff of the German Air Force has pointed out that:

> It must be realized, however, that conceptual thinking and NATO force planning must keep pace with the dynamic development of the WP threat. The dependence of the success of NATO's political and military intentions [rely] on effective air power in peace and in war requires a well-balanced exploitation of available resources. (11:64)

Training for large force employment within the NATO command and control structure does precisely what Lt Gen Eimler is talking about. It broadens the conceptual framework for employing TACAIR, it exercises NATO planning staffs in their wartime duties and it ensures that NATO is capable of a "well-balanced exploitation of available resources." More importantly, exercising large force employment through the NATO structure makes a major contribution toward ensuring that we "Train Like We Fight" in Europe. Leaving 3AF in charge of large force exercises is like training for a football game with one coach and then bringing in an entirely new coach with different plays for the game. While it's better than not having any training (or coach) at all, it

does prevent us from realizing our fullest potential.

Furthermore, large force employment exercises in the NATO framework can also serve as an added deterrent to WP aggression. As General Eimler also states:

> In-place air power, exercising and practicing wartime functions within the combat command structure in or close to the area of possible battle, daily inter-linking amongst [our] own forces and with the other services, producing [our] own plans, procedures and concepts on a carefully assessed threat, means being as prepared as possible. In large scale exercises, Central Region air power demonstrates its pronounced combat potential, discouraging the WP from putting its potential on trial. (11:58)

The investment of resources required to develop an organic capability in NATO to conduct large scale TACAIR employment, in both exercise and wartime scenarios, is minimal. Large force flying training can easily be accomplished without increasing current flying hour allocations. Flying in large force employment packages is one of the least demanding skills required of a TACAIR crewmwmber. The major investment in large force employment is in training staff planners and mission commanders how to build viable packages; a critical, yet relatively undemanding, skill. The benefits from such investments far exceeds the cost.

> "Men alone, or machines alone, do not spell success: how men use machines in the combat environment, and the spirit of leadership that guides that use, spell victory or defeat." (35:2-4)

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